

Nomenclatural Actions in *Whytockia* (Gesneriaceae)

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ABSTRACT. On the basis of morphological, anatomical, and karyotypic evidence, a change in status is proposed for *Whytockia wilsonii* (A. Weber) Y. Z. Wang, which is elevated from varietal to species level. Further, the affinity of another variety currently accepted within *W. tsiangiana* is recognized, and it is now transferred from *W. tsiangiana* as the new combination *W. hekouensis* var. *minor* (W. W. Smith) Y. Z. Wang. Illustrations of *W. wilsonii* are included along with morphological descriptions and diagnostic characters. The relationships of these and related species are discussed as well as geographic distribution. A key distinguishing these species is provided.

Key words: China, Gesneriaceae, *Whytockia*.

The genus *Whytockia* W. W. Smith includes eight species endemic to China. It was proposed by W. W. Smith in 1919 for the accommodation of *Stauranthera chiritiflora*, in which he distinguished a variety *minor*. With limited material, Weber (1982) conducted a preliminary revision of *Whytockia* in which three species were recognized. The current author has carried out systematic and evolutionary studies on *Whytockia* and its allies since 1991. Intensive research in herbaria, field, and laboratory over the last ten years has led to a better understanding of this group and to the discovery of several species previously unknown to science. The recognition of significant characters contributes to a natural delimitation of the taxa of *Whytockia*. The nomenclature of two taxa previously treated as varieties needs adjustment herein.

Whytockia wilsonii (A. Weber) Y. Z. Wang, stat. nov. Basionym: *Whytockia tsiangiana* (H. Handel-Mazzetti) A. Weber var. *wilsonii* A. Weber, Notes Roy. Bot. Gard. Edinburgh 40: 365. 1982. TYPE: China. Sichuan (Szechuan): side of stream, Sep. 1903, *E. H. Wilson* 3292 (holotype, BM; isotypes, E, K). Figure 1.

Leaves opposite, strongly unequal. Larger leaf blades broadly obovate or widely ovate-oblong, 9–11 × 3–4 cm, nearly sessile or with a short petiole 2–3 mm long, base oblique, widely cuneate or rounded on the wide side to cuneate on the narrow side, mar-

gins serrate-dentate, teeth 1.5–3 mm long. Smaller leaf blades ovate, 6–13 mm long, sessile. Pair-flowered cymes emerging from the axils of the larger leaves. Sepals 5, free or connate at base, ovate or ovate-triangular, 2–3 × 1–2 mm. Corolla red or reddish, tubular and bilabiate, 1.5–2 cm long with corolla tube 10 mm long, outside glabrous, inside with 2 rows of yellow-green unicellular and clavate hairs under and between lobes of the lower lip; upper lips 3 mm long, 2-lobed; lower lips about 6.5 mm long, 3-lobed. Stamens 4, didynamous, attached to corolla base for 2 mm. Staminode long ovate, 1.1 mm long. Ovaries ovate, about 1.5 mm long; styles about 4.6 mm long; 2 stigmas only connate at base. Seeds minute, many, testa obliquely striate.

Whytockia wilsonii resembles *W. bijieensis* Y. Z. Wang & Z. Y. Li by its large corolla (1.5–2 cm long), 5 sepals free or connate at base, and 2 stigmas free or only connate at base. In addition, *W. wilsonii* and *W. bijieensis* have a karyotype ($2n = 18$) more similar to each other than to other *Whytockia*, i.e., similar frequencies of median and submedian chromosomes, and lacking a subterminal chromosome (Wang et al., 1998). However, *W. wilsonii* is easily distinguished from *W. bijieensis* by the following morphological characters, i.e., the large leaf blades of unequal leaf pairs broadly obovate or widely ovate-oblong with base widely cuneate or rounded on the wide side; blade margins serrate-dentate with teeth 1.5–3 mm long; seed testa obliquely striate. The X-shaped ventral carpelary bundle of the ovary and the anchor-shaped axile placentas are remarkably distinctive from those of other species in *Whytockia* (Wang & Pan, 1998).

Whytockia hekouensis Y. Z. Wang var. *minor* (W. W. Smith) Y. Z. Wang, comb. nov. Basionym: *Whytockia chiritiflora* (Oliver) W. W. Smith var. *minor* W. W. Smith, Trans. Bot. Soc. Edinburgh 27: 338. 1919. *Whytockia tsiangiana* (H. Handel-Mazzetti) A. Weber var. *minor* (W. W. Smith) A. Weber, Notes Roy. Bot. Gard. Edinburgh 40: 365. 1982. TYPE: China. Yunnan: Yuanyang, Feng Chunling (Feng Chen Lin), in mountain forest, 7000 ft. alt., *A. Henry* 11232 (holotype, E; isotype, K).

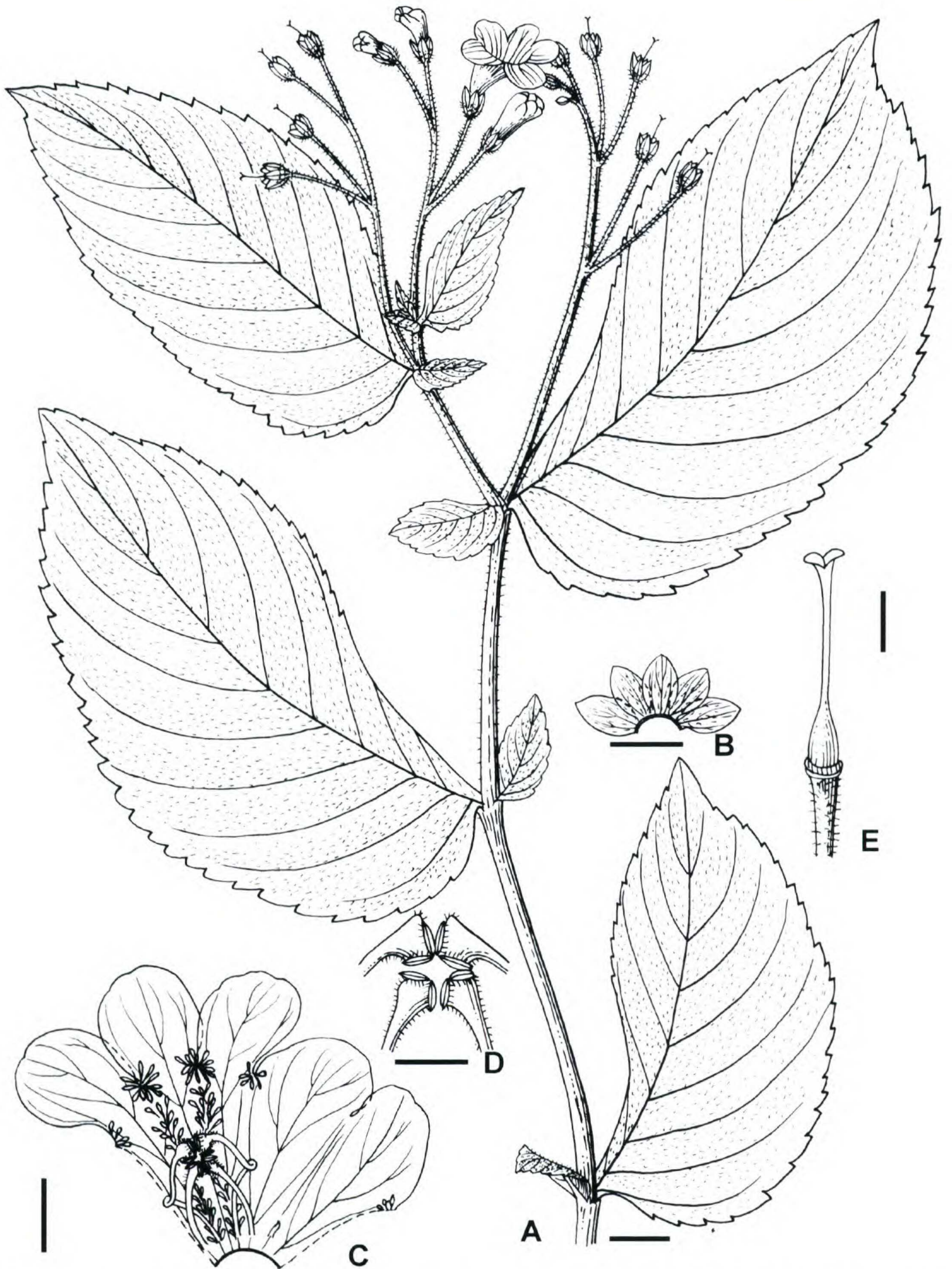


Figure 1. Diagrammatic illustrations of the holotype of *Whytockia wilsonii* (E. H. Wilson 3292, BM). —A. Plant with flowers, scale bar = 10 mm. —B. Opened calyx taking view from abaxial side, scale bar = 4 mm. —C. Corolla opened to reveal two internal rows of clavate hairs under and between lobes of the lower lip, scale bar = 4 mm. —D. Anthers, scale bar = 2 mm. —E. Pistil, showing longer styles 2–2.5 times as long as ovary, and two stigmas connate at their base, scale bar = 2 mm.

Whytockia hekouensis var. *minor* differs from variety *hekouensis* in its calyx lobe narrowly ovate, apex ascending-spreading; flower pedicel not incrassate on upper portion after anthesis.

Whytockia wilsonii and *W. hekouensis* var. *minor* were previously treated as varieties within *W. tsiangiana* (Weber, 1982). The former was described as a new variety for *W. tsiangiana*, while the latter was transferred from *W. chiritiflora* to *W. tsiangiana* (Weber, 1982). The species *W. tsiangiana* is characterized by its small, white corolla (8–12 mm long), its shorter style equal to the ovary or less than 1.5 times as long as the ovary, and its wholly connate stigma. Four other species, *W. bijieensis*, *W. wilsonii*, *W. chiritiflora*, and *W. hekouensis*, have large, red corollas (1.5–2 cm long), longer styles 2–2.5 times as long as ovary, and 2 stigmas free or connate only at their base or in their lower half. Among the four species, the 5-lobed calyx united in a tube to the mid-point of the calyx makes *W. chiritiflora* and *W. hekouensis* cluster together, while *W. wilsonii* is closely related to *W. bijieensis* in five sepals that are free or connate at base, and two stigmas that are free or only connate at base. In addition to the above morphological characters, the karyotype of *W. tsiangiana*, i.e., $2n = 18 = 4m + 8sm (2sat.) + 6st$, demonstrates a high degree of asymmetry that is remarkably distinctive from those of other species above. *Whytockia wilsonii* and *W. bijieensis* have closely similar karyotypes, for the two species have similar frequencies of median and submedian chromosomes and lack a subterminal chromosome, i.e., $2n = 18 = 2M + 8m (1sat.) + 8sm (2sat.)$ in *W. wilsonii* and $2n = 18 = 2M + 8m + 8sm (1sat.)$ in *W. bijieensis* (Wang et al., 1998). Moreover, *W. tsiangiana* is widely distributed from eastern Guizhou Province to central China, i.e., Hunan, western Hubei, and northern Guangxi Provinces. In contrast, *W. wilsonii* is limited to southern Sichuan Province adjacent to the distributional area of *W. bijieensis* in western Guizhou and northeastern Yunnan Provinces (Wang & Li, 1997). *Whytockia chiritiflora* and *W. hekouensis*, two species standing sharply apart from the rest of *Whytockia* in their 5-lobed calyx united in a tube to the mid-point of the calyx, are restricted to separate localities in southeastern Yunnan Province (Wang, 1995). The four species, i.e., *W. bijieensis*, *W. wilsonii*, *W. chiritiflora*, and *W. hekouensis*, are located in the area where the plants of Gesneriaceae are most diverse in the world. A

diagnostic key for these five species (including varieties) is provided below.

KEY TO THE *WHYTOCKIA* SPECIES AND VARIETIES
DISCUSSED ABOVE

- 1a. Corolla white, 0.8–1.2 cm long; style 0.6–0.8 mm long, equal to ovary or less than 1.5 times as long as ovary; stigma wholly connate, elliptic-disciform *W. tsiangiana*
- 1b. Corolla red or reddish, 1.5–2 cm long; style 4–6 mm long, 2–2.5 times as long as ovary; two stigmas free or connate at base or in lower half.
 - 2a. Five-lobed calyx united in a tube to the mid-point of calyx.
 - 3a. Two stigmas free; fruit a capsule, bivalvate dehiscent *W. chiritiflora*
 - 3b. Two stigmas connate in lower half; fruit a capsule, irregularly dehiscent *W. hekouensis*
 - 4a. Calyx lobes widely ovate or ovate-triangular, apically reflexed; pedicel incrassate on upper portion after anthesis *W. hekouensis* var. *hekouensis*
 - 4b. Calyx lobes narrowly ovate, apically ascendingly spreading; pedicel not incrassate on upper portion after anthesis *W. hekouensis* var. *minor*
 - 2b. Calyx with 5 sepals, free or connate at base.
 - 5a. Larger leaf blade of unequal leaf pair narrowly ovate-oblong, margins irregularly repand-serrate and glandular-serrate, these serrations 1–1.5 mm long, base auriculate or rounded on wide side; the two stigmas free; seed testa reticulate *W. bijieensis*
 - 5b. Larger leaf blade of unequal leaf pair widely obovate or broadly ovate-oblong, margins serrate-dentate, these teeth 1.5–3 mm long, base widely cuneate or rounded on wide side; the two stigmas connate at base; seed testa obliquely striate *W. wilsonii*

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